Environmental Science Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Estimating Population Size of *Chicka beans* using the Capture-Recapture Method**

**Key Question:**

**Hypothesis:**

**Introduction**

**General Formulas**

**1.**

**2.**

**Procedures**

1. Count the number of beans in your jar, record this number on a small piece of paper and give to your teacher.

2. Distribute the beans around the soccer fields outside. The borders of this field represent the shores of a lake and all these beans represents the original total population.

2. Begin the capture and marking portion of the experiment in an attempt to estimate the number of *Chica beans* . This is done by capturing as many beans as possible in 1 minute, marking them, and then releasing them. In real life, biologists are guided by statistical criteria and time and resource constraints when deciding the number of units to be tagged.

3. The class regroups before going out to capture more beans*.*  This represents the recapture event. Record the data for each trial.

**Results**

Record your data below and use the formula outlined in the introduction to calculate the estimated population size.

EXAMPLE

Trial 1:

M (The number of beans caught, marked and released during first capture)) = \_\_\_\_\_\_\_\_\_\_\_

R (number of beans recaptured) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

n (number of beans that were marked in the recapture event) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Repeat using only unmarked beans for trials 2 and 3.*

Trial 2: M = \_\_\_\_\_\_\_\_\_\_\_ n = \_\_\_\_\_\_\_\_\_\_\_ t = \_\_\_\_\_\_\_\_\_\_\_ N = \_\_\_\_\_\_\_\_\_\_\_

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Average of three trials: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Analysis & Conclusions**

1. How close or how far did the experiment accurately estimate the size of the population?

2. Why is it important not to see the sample being recaptured?

3. Why withdraw the recaptured population one at a time rather than in clumps?

4. What are the possible sources of error with the capture-recapture method be used?

5. Why do biologists sample populations and estimate their size?

6. Explain in detail how you would capture and estimate the number of White footed mice in Rhode Island.